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constantly changing both in position and in intensity. Across these streamers, pale green pulsating clouds drifted, in general from north to south, but occasionally assuming a spiral form around the zenith. They attained their maximum brightness near the zenith where they were especially conspicuous on account of their almost instantaneous changes in intensity.

Bright colors were not noticed during the evening, but after the moon set about midnight, pale reds and blues appeared on the edges of the streamers and clouds. The display continued at intervals throughout the night. It was not more conspicuous in the north than in other directions.

The aurora was undoubtedly due to the very large group of sun-spots which had just passed the center of the sun's disk.

FREDERICK SLOCUM

MIDDLETOWN, CONN.,
May 15, 1921

AGAINST a clear, moonlit sky, a brilliant auroral display was observed at Ames, Iowa, between 8:30 and 10:30 P.M. on May 14. The arch which was visible throughout this time except at short intervals, formed in our magnetic north and extended about 15 degrees above the horizon.

As the streamers, which were predominantly white, grew in number, in length and in extent along the horizon, they converged to a focus at a point somewhat variable in position but approximately 15° south and 5° west of the zenith, which point, the magnet zenith, became a center of radiation for the streamers. About 15 minutes before the maximum development of the display, streamers of red were seen to rise from the horizon a few degrees south of east and to extend through the radiant center to the horizon about the same distance north of west, forming an arch along a magnetic parallel.

The maximum degree of brilliancy was attained at 9:27, when the streamers from a large coronal area formed about the magnetic zenith extended to the horizon in all directions, lighting the entire heavens. The radial

streamers were visible within a few degrees of the moon, which had just passed the first quarter. At this time a dark area a few degrees west of south on the horizon closely resembled an auroral arch, but a definite segment of a circle like that on the northern horizon could not be discerned.

The shades, tints and hues, changeable and increasing from the beginning of the observation, now became more distinct and all of the primary colors appeared in varying degrees of intensity. Reappearing intermittently, the colors gradually faded away during the remaining hour of the display.

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RUSSIAN GEOLOGISTS

THE sad fate that has befallen many of the leading Russian geologists and mineralogists constitutes a gloomy chapter in the history of these sciences. From particulars gathered by Professor Sederholm, of Sweden,¹ and confirmed by a personal letter of March 30, 1921, received from Dr. Cornelius Doelter of Vienna, the following data have been secured.

Of some seventy Russian specialists in these fields eleven are dead. Of these, there died in Petrograd the well-known Professors Inostranzer, Fedorov (who died of hunger), Karakash, Derzhavin and Kasanski. Professor Sokolov died in Moscow. Professor Armashevski was shot in Kiev, as were Professors Samiatin and Mitkevich in Petrograd. Stopnjevich died of smallpox and Snertkov of hunger-typhus. Baron Rebinder committed suicide, and it is reported that Faas is seriously ill.

The president of the Petrograd Academy of Sciences, and former director of the Geological Institute, Alexander Karpinsky, the Nestor of Russian geologists, who is now eighty years old, lives with his three daughters, a son-in-law, and his grandchildren, in a cold kitchen, and suffers great deprivation be-

¹ Given by Professor Mohr in *Centralblatt für Mineralogie, Geologie und Paläontologie*, 15 Jan., 1921, No. 2, p. 60, from the *Svenska Dagbladet*.

cause of the lack of necessities of life, although his scholars, with touching zeal, bring everything they are able to secure.

Professor Andrussov and the Academician Vernadsky were fortunate enough to make their way to South Russia, and it is stated that the latter seems to be in good circumstances, as he has founded a new academy of sciences in Kiev, and also a new university in Simferopol. About ten of these scientists fled across the frontier, and escaped to Finland or Poland, or even to America or Japan, and perhaps as many more are scattered through Siberia. From fifteen to twenty are probably in the Russian provinces, but only about ten are managing to exist in Petrograd.

The famous mineralogist Fedorov, whose death from hunger we have noted, was the first to proclaim, at a meeting in St. Petersburg, in 1889, the great advantages that would result from the application of the principle of the theodolite to goniometrical researches. Four years later, in 1893, he published his classic work, "The theodolite method in mineralogy and petrography."²

G. F. K. AND E. T. W.

SCIENTIFIC BOOKS

The Coccidæ. Tables for the Identification of the Sub-families and Some of the More Important Genera and Species, together with Discussions of their Anatomy and Life History. By ALEX. D. MACGILLIVRAY. Scarab Company, Urbana, Ill., 1921. Pp. viii + 502. \$6.00.

Entomologists who have been acquainted with Dr. MacGillivray's thoroughgoing studies of the scale-insects have long awaited the appearance of this volume. The material was originally collected for the use of students in the identification of Coccids. Prepared in its first draft about fifteen years ago, it has been greatly extended, modified and revised as it was being tested out in laboratory and class work.

² W. W. Nikitin, "La Méthode universelle de Fedorov," French transl. by Louis Duparc and Véra de Dervies, 2 vols. Geneva, Paris and Liège, 1914, Vol. I., p. 6.

In no group of insects of equal importance is so much reliance in systematic work placed upon minute structural details. Many a would-be student of the group has been deterred by difficulties of preparation of material and by lack of a comprehensive discussion, in English, of the morphology. To such the volume will prove a veritable boon.

A chapter is devoted to details of technique. In this are considered necessary equipment, tools, clarifying and the various stages in the making of permanent preparations. This is followed by a chapter on the external anatomy of the Coccidæ. The "great number of species and the dearth of usable characters, because of the simplification of their external form and structure, makes it necessary to employ every available structure." In spite of the lack of illustrations, the discussion and definition of these structures is clear-cut.

Figures were omitted for pedagogical reasons.

The tables were prepared primarily for the use of students. Those who have had any experience in teaching know that most students will not undertake anything they are not forced to do. The omission of figures makes it necessary for them to study their specimens rather than figures.

The author's detailed studies on the phylogeny of the different subfamilies; genera and species have led him to the establishment of a considerable number of new genera, which are here defined for the first time. The group as a whole he divides into seventeen subfamilies, which have been treated in an ascending order. A tabular arrangement indicates what the author believes to be the relation of these subfamilies, and the scientific and vernacular names that have been applied to them.

Dr. MacGillivray has done a real service in making the materials of his course available to a wider audience. The book will prove indispensable to future students of the Coccidæ.

WM. A. RILEY

The Soils and Agriculture of the Southern States. By HUGH HAMMOND BENNETT, of